

**UCC Library and UCC researchers have made this item openly available.  
 Please [let us know](#) how this has helped you. Thanks!**

<b>Title</b>	A two-tiered public-private health system: Who stays in (private) hospitals in Ireland?
<b>Author(s)</b>	Murphy, Aileen; Bourke, Jane; Turner, Brian
<b>Publication date</b>	2020-05-13
<b>Original citation</b>	Murphy, A., Bourke, J. and Turner, B. (2020) 'A two-tiered public-private health system: Who stays in (private) hospitals in Ireland?', Health Policy, 124(7), pp. 765-771. doi: 10.1016/j.healthpol.2020.04.003
<b>Type of publication</b>	Article (peer-reviewed)
<b>Link to publisher's version</b>	<a href="http://www.sciencedirect.com/science/article/pii/S0168851020300889">http://www.sciencedirect.com/science/article/pii/S0168851020300889</a> <a href="http://dx.doi.org/10.1016/j.healthpol.2020.04.003">http://dx.doi.org/10.1016/j.healthpol.2020.04.003</a> Access to the full text of the published version may require a subscription.
<b>Rights</b>	© 2020, Elsevier Ltd. All rights reserved. This manuscript version is made available under the CC BY-NC-ND 4.0 license. <a href="https://creativecommons.org/licenses/by-nc-nd/4.0/">https://creativecommons.org/licenses/by-nc-nd/4.0/</a>
<b>Embargo information</b>	Access to this article is restricted until 12 months after publication by request of the publisher.
<b>Embargo lift date</b>	2021-05-13
<b>Item downloaded from</b>	<a href="http://hdl.handle.net/10468/10333">http://hdl.handle.net/10468/10333</a>

Downloaded on 2021-11-27T12:08:37Z

**TITLE:** A two-tiered public-private health system: Who stays in (private) hospitals in Ireland?

**AUTHORS:** Dr Aileen Murphy, Dr Jane Bourke & Dr Brian Turner

**AFFILIATION:** Department of Economics, Cork University Business School,  
University College Cork

**CORRESPONDING AUTHOR:**

Dr Aileen Murphy,  
Department of Economics,  
Cork University Business School,  
University College Cork,  
[aileen.murphy@ucc.ie](mailto:aileen.murphy@ucc.ie);  
+353 21 4903489

**CONFLICTS OF INTEREST:**

Authors declare they have no conflict of interest.

**Highlights**

- Inpatient stays are more likely amongst those with PHI with/without public entitlements.
- Certain groups, if hospitalised, are significantly more likely to access private hospitals.
- Private hospital stays more likely amongst those aged 25 to 65.
- Despite concentration of private hospitals in urban centres location is not significant.

**Abstract:**

Despite efforts to create a universal, single-tiered Irish health system, an unequal "two-tiered" system persists. The future blueprint for Irish health care, Sláintecare, recommends a separation of public and private hospital treatment. This study examines patterns of overall and private hospital utilisation in Ireland that could help identify some of the impacts of the proposed separation of public and private hospital treatment. Using data from EU-SILC (2016) (n=10,131) the factors associated with inpatient hospitalisation and private inpatient hospitalisation are estimated using probit models.

Unsurprisingly, those who are economically inactive are more likely to have had an inpatient stay. Furthermore those aged over 65, with a chronic illness, with a medical/ GP visit card and private health insurance and those with only private health insurance are also more likely to have had an inpatient stay. Those with only primary education are less likely to report an inpatient stay in private hospital. Those aged over 25 and less than 65, those with a medical/ GP visit card and private health insurance and those with only private health insurance are significantly more likely to opt for a private hospital. Understanding overall and private hospital utilisation patterns is imperative for implementing universal health care and associated resource planning, and fulfilling policy recommendations .

**Abstract:**

Despite efforts to create a universal, single-tiered Irish health system, an unequal "two-tiered" system persists. The future blueprint for Irish health care, Sláintecare, recommends a separation of public and private hospital treatment. This study examines patterns of overall and private hospital utilisation in Ireland that could help identify some of the impacts of the proposed separation of public and private hospital treatment. Using data from EU-SILC (2016) (n=10,131) the factors associated with inpatient hospitalisation and private inpatient hospitalisation are estimated using probit models.

Unsurprisingly, those who are economically inactive are more likely to have had an inpatient stay. Furthermore those aged over 65, with a chronic illness, with a medical/ GP visit card and private health insurance and those with only private health insurance are also more likely to have had an inpatient stay. Those with only primary education are less likely to report an

inpatient stay in private hospital. Those aged over 25 and less than 65, those with a medical/GP visit card and private health insurance and those with only private health insurance are significantly more likely to opt for a private hospital. Understanding overall and private hospital utilisation patterns is imperative for implementing universal health care and associated resource planning, and fulfilling policy recommendations .

## **Introduction**

Ownership and financing systems are often considered key components in explaining how hospitals operate, which services they offer and to whom (1). Much of the evidence suggests that private hospitals tend to provide fewer services, specialise in certain treatments and therapeutic areas and provide care for low-cost patients (2-4). The Irish health system features a complex interaction between public and private funding and delivery mechanisms (5), and provides a unique context for considering differential use of public and private hospitals. Sláintecare, the 10-year cross-party parliamentary blueprint for the future of Irish health care, recommends a separation of public and private hospital treatment (6). However, to date, empirical evidence of patterns of private hospital utilisation has not been available to inform Irish healthcare policy due to data issues (6). Such evidence could help to identify some of the impacts of this proposed move (the expansion of public hospital services by removing private practice from public hospitals), which may have implications for both demand and service provision, and may also prove useful for other countries with mixtures of public and private delivery that are considering a greater separation of the two.

While the Irish health system has some distinct features, it also shares common features and issues with other health systems, and is generally closest to those in the UK and Australia in terms of being predominantly tax-funded and, in the case of Australia, having a significant private health insurance market operating alongside the public system. Interestingly, the policy agenda in the UK is moving towards increasing the amount of private practice in public hospitals, albeit from a much lower base than that in Ireland or Australia (5). This increasing prominence of private health care provision generates considerable interest regarding quality of care, costs, equality and efficiencies, as well as its role alongside, and sometimes within, the public health care system (7, 8).

Given the narrower range of services in private hospitals, and their specialisation in lower-cost treatment areas (2-4), one issue that has been raised in relation to private hospitals operating alongside public ones is that of ‘cream skimming’. This refers to selecting patients with lower expected cost of treatment by hospitals and health care providers, as such organisations stand to gain financially by focusing on patients with less severe medical

conditions (7). An Australian study found that patients with more disease severity are more likely to be transferred from private to public hospitals, whereas the reverse is true for patients with less disease severity. In addition, patients transferred to public hospitals were more likely to stay longer than patients transferred to private hospitals, all else equal (1, 7).

Many studies of private versus public hospitals have considered possible differentials in quality of care. However the empirical evidence is largely inconclusive, with some studies reporting lower quality of care at private hospitals, while others find no difference in quality by ownership type (3, 9). In addition, a number of studies report no difference in mortality rates by ownership type (10, 11). In line with previous studies (2-4), a recent study on cardiovascular procedures in Norway (1999 to 2006), reports that private non-profit hospitals specialise in certain procedures, and are more likely to admit low-severity patients for some procedures (1). However, it concludes that “the association between quality of care and hospital ownership is mixed since private non-profit hospitals both offer shorter waiting time and shorter length of stay” (1). In an Irish context, Keegan et al (12) note that there is no centralised system for the reporting of activity in private hospitals, which makes it difficult to compare such activity with that in public hospitals, which is centrally collated by the Hospital Inpatient Enquiry system.

Cheng et al. (8) investigate the extent of hospital care utilisation differentials across three groups of patients in the Australian health system in which public and private providers coexist: patients who exclusively use public hospital care, patients who exclusively use private hospital care, and patients who use a mixture of both types. They argue that if a mixed public–private system is to provide additional cost savings to a purely public health care system, the average hospital utilisation of patients using both public and private care (and patients relying solely on private care) cannot be higher than that of patients who only use public hospitals, all else equal. However, their findings indicate that this is not the case in Australia, with patients who use a mixture of private and public care reporting the highest total hospital utilisation (8). This finding is robust to how utilisation is measured and endogeneity between utilisation and hospital type (8).

In this study, we examine patterns of overall and private hospital utilisation in Ireland. The EU-SILC (2016) data provides information on inpatient hospitalisation and, importantly, on whether the visit is to a public (state-funded) or private hospital. The dataset also includes respondents' socio-economic details, region, and health metrics. Given the nature of the Irish health system, there is also information on whether the respondent holds private health insurance (PHI), a GP visit card or a Medical Card (see the next Section for more details on these). Probit models are used to examine the factors which are associated with, firstly, inpatient hospitalisation and, secondly, private inpatient hospitalisation.

## **Background to the Irish Health System**

The Irish health system contains a complex interaction between public and private funding and delivery mechanisms. The current public-private mix partly stems from the fact that, unlike many other countries, Ireland does not have a well-specified universal entitlement to health services. Rather, eligibility is primarily determined by possession of a General Medical Services (GMS) card, commonly referred to as a Medical Card. Eligibility for a Medical Card is largely based on low income. However, some categories of people are not means-tested for Medical Cards, such as children in receipt of Domiciliary Care Allowance, while there is a higher income threshold for those aged 70 or over (who, between 2001 and 2009 were eligible irrespective of income).

Those who have a Medical Card (Category I) – approximately 33% of the population (13, 14) – receive inpatient, day case and outpatient care free at the point of use, and face modest co-payments for prescription medication (currently €2 per item up to a monthly limit of €20 per individual/family, reduced to €1.50 per item/€15 per month for those aged 70 and over). Those without a Medical Card (Category II – approximately 67% of the population) must pay out-of-pocket charges for medical services. These include full charges for General Practitioner (GP) visits, which average €52.50 per visit (15), a monthly deductible of €124 for prescription medication under the Drug Payment Scheme (DPS), a €100 charge for visiting an public hospital Emergency Department without a GP referral, and an €80 per night statutory bed charge for stays in public hospitals (up to a maximum of €800 in a continuous 12-month period).

Some people in Category II are eligible for a GP Visit card, which gives them free at the point of use GP visits, but not the other benefits of the Medical Card. Eligibility for these cards is based on a mixture of income (with a higher threshold than for Medical Cards) and age (anyone aged under-6 or over-70 is entitled to a GP Visit card, although the Government plans to widen eligibility for these cards based on age over the coming years). At the end of 2017, approximately 10% of the population had GP Visit cards (13, 14).

Separately, voluntary PHI is available in Ireland to anyone who wishes to purchase it, (indeed there is a cohort that have both Medical Cards and PHI – see, for example, HIA (16)). This insurance is primarily supplementary in nature, providing faster access, greater choice of provider and/or superior accommodation, although there is a complementary element whereby partial reimbursement is available on some day-to day healthcare expenditure (17). Currently, just under 46% of the population is covered by PHI(18). The main drivers of demand include fears about the cost of medical treatment/accommodation and concerns over access to, and the standard of, public services (19). All plans provide cover for public hospitals (in a limited range for some plans), while the majority of plans provide significant cover for private hospitals (again, some plans cover limited lists of private hospitals). As at 1<sup>st</sup> July 2018, 90% of insured members across the market were on plans that cover private hospitals (20). In the first half of 2018, the value of equalised benefits paid by insurers was €925m, of which 27% was paid to public hospitals, 52% to private hospitals and 21% to consultants. The proportions paid to public and private hospitals in 2017 were 29% and 50% respectively, while in 2016 they were 33% and 47% respectively (20).

Hospital capacity in Ireland consists of a mixture of public and private hospitals. The former include hospitals funded and managed by the Health Service Executive (HSE) and voluntary hospitals, which are funded by the HSE but managed by independent, often charitable, bodies. These voluntary hospitals have, in some research, been denoted as private not-for-profit to fit in with established international definitions, but that research acknowledges that in the Irish nomenclature they would be considered public hospitals rather than private ones (21). Private (for-profit) hospital capacity (hereinafter referred to as private hospitals) has



increased since the turn of the century, aided by tax incentives for private hospital development from 2002 until 2010, and the establishment in 2005 of the National Treatment Purchase Fund (NTPF), which pays for private treatment of public patients who have faced long waiting times. At the same time, public hospital capacity has been reduced since the 1980s (21).

As at 2015, there were 50 acute public hospitals in Ireland, providing 12,476 beds (10,043 inpatient beds and 2,003 day beds), and a further 18 private (for-profit) hospitals, providing 2,506 beds (1,910 inpatient and 596 day beds) (21). According to Keegan et al (22), public hospitals accounted for 85% of all inpatient bed days and 69% of all day patient care. Of the 18 private hospitals, only four are located outside the main cities of Dublin, Cork, Galway, Limerick and Waterford, while 24 public hospitals are located outside these urban centres.

Ireland has a relatively low provision of hospital beds – 3.0 per 1,000 population in 2017, compared with an OECD average of 4.7 – and the highest bed occupancy rate in the OECD, at 94.9% in 2017, well above the OECD average of 75.2% and also above the rate of 90% associated with risks to patients (23). This may be partly due to a sharp reduction in public inpatient hospital bed capacity, from 15,111 in 1980 to 10,411 in 2013, resulting from two periods of austerity, one in the 1980s and the other following the 2008 financial crisis (21).

Most public hospital consultants in Ireland are entitled to engage in private practice. In some cases, this entitlement is limited to public hospital campuses, while in others consultants have rights to engage in off-site private practice. A recently published review of private practice in public hospitals (24) shows that only 6% of consultants employed in acute public hospitals in Ireland are employed on public-only contracts, while 94% of consultants have private practice rights. The report also found that 22% of consultants employed in acute public hospitals are permitted to conduct private practice off-site (in a private hospital or clinic), while the remainder must conduct their private practice on public hospital campuses. This contributes to an institutionalisation of private practice in public hospitals.

Until 2013, 20% of beds in public hospitals were designated as private beds, with insurers charged if their members were accommodated therein. However, insurers were not charged if their members were accommodated in public or non-designated beds (such as those in Intensive Care Units), although treating consultants still charged for their work. Changes were made to bed designations from 1<sup>st</sup> January 2014, and insurers are now charged if their members are accommodated in any bed in public hospitals (17). Initially, this led to an increase in private income to public hospitals, however insurers have, more recently, encouraged their members to only elect to be treated as private patients if they receive a benefit from doing so (faster access, better accommodation or greater choice of provider). If they do not (for example, if they are admitted as an emergency case, are treated in a ward rather than a private or semi-private room, and do not get a choice of treating consultant), then they are encouraged to exercise their rights to be treated as public patients.

Meanwhile, private hospitals are heavily reliant on income from private health insurers, with procedures purchased by the NTPF and a relatively small amount from self-paying patients accounting for the remainder. Keegan et al (12) note that Central Statistics Office estimates suggest that 92% of private hospital financing came from PHI in 2014.

Public hospitals are reimbursed for the treatment of public patients largely on the basis of fixed budgets, adjusted for Casemix. A new Activity-Based Costing model is due to be rolled out but progress on this has been slow. The accommodation of privately insured patients in public hospitals is based on a fixed nightly rate, set by the Minister for Health, while consultants treating private patients in public hospitals are paid on a fee-for-service basis. Private hospitals are paid on a fee-for-service basis.

## **Materials and Methods**

The EU-SILC, an annual survey instrument, is the EU reference source for comparative statistics on income distribution and social inclusion at national and European level; it is

collected from households using face to face interviews under Regulation (EC) No 177/2003. The EU SILC Ireland 2016 dataset is employed for this analysis (25).

The full sample consists of 10,131 individuals, of whom 47% are male, 25% are over 65 years; 54% are married, 21% have third level education, 38% live in rural areas (with the remainder in urban areas) and 28% live in the Border /Midlands / West region, with the remainder in the Southern and Eastern region (see Table 1). (See (26) for further information on the NUTS 2 regional classification in Ireland.) Nearly half (47%) are employed, 6% unemployed and 47% are economically inactive (studying, home duties, ill/disabled or other) and average net disposable income at household level is €51,031. With regards to health outcomes, 29% have a chronic illness. Self-reported health status was also collected, with 40% reporting their health status to be very good; 42% as good; 15% fair; 3% bad and 1% very bad. In terms of medical care coverage, 10% of the sample report having a medical or GP visit card and PHI; 35% have PHI only; 35% have a medical card only; 2% have a GP visit card only and 18% report having neither a Medical/GP Visit Card or PHI.

Respondents were asked to indicate if they spent a night in hospital as an inpatient over the last 12 months (irrespective of type of hospital); 10% of the sample revealed they had an inpatient stay during the period. Respondents were also asked the number of nights they spent as inpatients in private and public hospitals. Unfortunately, the corresponding number of admissions was not recorded so this count data could not be used in a meaningful way. A binary variable was constructed where 1 indicates if the respondent's stay was in a private hospital and 0 if the stay was in a public hospital. Of respondents who had an inpatient stay in hospital, 19.7% of those were in private hospitals (remainder in public hospitals), which is consistent with previous research (22). Furthermore, type of admission (elective or emergency) or reason for admission was not recorded. Table 1 presents the descriptive statistics for the sub-set of the sample that had hospital stays and private hospital stays.

Comparing the sub-sets of the sample (Table 1) we can see that amongst those who had a hospital stay (in all hospitals), 56% were married, 41% male, 26% primary education only, 65% were economically inactive, 40% were aged over 65 and 57% had a chronic illness.

Whilst amongst those with inpatient stays in a private hospital, 46% were male, 70% were married, 30% had third level education, 64% were economically inactive and 52% had a chronic illness.

## Methods

To investigate the factors associated with inpatient hospital stay we employ the random utility model (27), a popular formation for analysing binary discrete choice behaviour. The premise being that when an individual has to make a choice between two alternatives they reveal their preferences by choosing the alternative with the highest utility index. This approach was also taken by Srivastava and Zhao (28).

Examining inpatient hospital utilisation, individual  $i$  has two alternatives: they can use or not use the service. We can specify these alternatives as functions of observed individual characteristics (health status, income, etc.). While their utilities for each alternative are unobserved, their choice reveals their preference, as they choose the alternative with the highest utility. Subsequently, individual  $i$  is faced with the decision to be admitted to a private or public hospital. Again here there are two alternatives: seek private care or public care: their preference is revealed by choosing the alternative with the highest utility.

The individual's decision for an inpatient stay is likely to be related to medical need and importance of good health. According to Propper (29) the latter is often positively associated with education and socioeconomic factors (including income, employment status etc.). Meanwhile the choice between private and public hospitals can be related to an individual's valuation of time and convenience which may be a positive function of income and employment status (28). Furthermore, the choice between private and public care is influenced by PHI status, ability to pay out-of-pocket and costs. These may be particularly important for lower socio-economic groups, which may be captured through a negative association with income (28).

Two probit models are used to examine firstly, inpatient hospitalisation and, secondly, private inpatient hospitalisation. Marginal effects are reported, at the sample mean values of the

regressors, which represent the absolute changes for the respective probabilities in response to a unit change in each individual explanatory variable (30).

We acknowledge that PHI is likely to be an important determinant when choosing between private and public care. The endogenous nature of PHI in relation to hospital admission and care type decision has received much attention in the literature (31). Eldridge et al (32) demonstrated that PHI can be exogenous to both the hospital admission decision and care type decision. This approach was also adopted in examining health service utilisation in Ireland (33) and Spain (34). With this in mind we control for PHI status in both models.

## **Results**

Table 2 presents the results of the two models: any inpatient hospitalisations (Model 1) and private hospital inpatient stays (Model 2).

### Model 1 – Any Inpatient Hospitalisations

The regression results reveal that, all else constant, males were less likely (18 percentage points) to have an inpatient stay in a hospital during the last 12 months than females. Interestingly, those with second level education only were less likely to have had an inpatient hospital stay in last 12 months compared to those with third level education (difference 12.5 percentage points). Meanwhile, those with children under 18 were more likely to have had an inpatient hospital stay in last 12 months than those without (12.3 percentage point difference). (Hospitalisations could include visits for maternity services.) Unsurprisingly, those who were economically inactive were more likely to have had an inpatient hospital stay (9 percentage points), compared to those in employment. Furthermore those with PHI only or a medical / GP visit card and PHI were more likely to have had an inpatient hospital stay than those with no medical coverage (i.e. no PHI or medical/GP visit card). With regards to self-reported health status, the regression revealed that those reporting health status less than very good were more likely to have an inpatient hospital stay compared with those reporting very good health status; the poorer the health status, the greater the probability of having an inpatient hospital stay. Also those reporting a chronic illness were more likely to report

having had an inpatient hospital stay compared to those without a chronic illness (30 percentage point difference).

### Model 2 - Private versus Public Hospital Inpatient Stays

The factors associated with the decision between private and public inpatient hospitals stays were estimated as being conditional on having an inpatient stay (Table 2). The results were mainly in line with prior expectations. All else constant, those with only primary education were less likely to report private hospitalisations compared with those with third level education (65 percentage point difference). Unsurprisingly, individuals with PHI only and those with PHI and medical/GP visit card were significantly more likely to have an inpatient stay in a private hospital, compared to those with no medical coverage (184 percentage point difference and 176 percentage point difference respectively). Those with children under 18 were less likely to have an inpatient stay in private hospital than those without (33 percentage point difference). Also those who are economically inactive were more likely to choose private hospitalisation compared to those employed (33 percentage point difference). Those aged 50-64 and 25-49 were all more likely also to have an inpatient stay in private hospital compared to those under 24. (Those aged under 24 had lowest level of PHI coverage (37%)).

Note, we did not include any interaction terms in the model presented above. Computing the marginal effects for interaction terms in nonlinear models and requires use of the INTEFF command in STATA (35), which we did for a number of interaction variables (chronic illness\*rural and economically inactive\*aged 65+). However, the marginal effects for the interaction terms, computed using the INTEFF command were not statistically significant and so the interaction terms were excluded from the model.

## **Discussion**

Ireland has an unusual degree of overlap between public and private funding and delivery of healthcare and this is best exemplified in the hospital system. Public (including voluntary) hospitals account for 83% of beds, with the remainder in private (for-profit) hospitals. The

majority of private hospitals are located in the main urban centres, while the public hospitals have a greater geographical spread, albeit still not entirely even.

Notwithstanding universal access entitlements to public hospitals (subject to co-payments for those who do not hold a Medical Card), 45% of the Irish population is covered by PHI. Much of the care of privately insured patients takes place in public hospitals, and a majority of public hospital consultants have private practice rights enshrined in their contracts.

This paper investigated the profile of users of hospital, and then specifically private hospital, services in Ireland, and gives an insight into the cohorts of people who are more likely to use these services. Those who are economically inactive, those aged over 65, those with a chronic illness, those with a medical/ GP visit card and PHI, and those with only PHI are more likely to have had an inpatient stay. While those with only primary education are less likely to report an inpatient stay in private hospital, those aged 25 - 64, those with a medical/ GP visit card and PHI and those with only PHI are significantly more likely to have had a stay in a private hospital.

Our study is not, however, without limitations. Firstly, the data source employed does not provide information on reasons for hospitalisations, length of stay, previous hospitalisations etc. Nor does it provide information on hospital quality, such as bed availability, staff-patient ratios, waiting lists, etc. While we utilise the best-available Irish data, our analysis would benefit from a richer dataset. Secondly, we consider health insurance and other medical coverage (Medical card and GP Visit card) as exogenous in the models, an approach adopted by others (32-34). Given the data available we were unable to investigate endogeneity using instrumental variables or other techniques.

The Sláintecare report (6) recommends a separation of public and private hospital treatment in Ireland, in particular the removal of private practice from public hospitals. The report from a review group, established to examine how this could be achieved, was published in late 2019 (24). However, patterns of private hospital utilisation are largely uninvestigated in Ireland, primarily due to a lack of data on activity in private hospitals (12). This suggests that Irish health care policy-making exists without a clear evidence-based picture of the nature and extent of private hospital utilisation.

## **Conclusion / Policy Recommendations**

Our analysis provides a first look at the factors associated with private hospital stays in Ireland, and raises a number of issues in the context of the proposed Sláintecare reforms. The first relates to equity. Smith (36) notes that a number of possible goals may be identified in terms of equity in healthcare, including ensuring equal access, distributing health care according to need, ensuring equal distribution of health, and distributing healthcare on the basis of ability to pay. The Sláintecare reforms aim to increase equity of access to health services by ensuring a universal single-tier health system.

Our findings show that equal access to healthcare is not currently a feature of the Irish health system as certain groups, if hospitalised, are significantly more likely to access private hospitals. Interestingly however, those in rural areas and those living in the Border, Midland and West region, if hospitalised, do not appear to have different levels of access to private hospitals as their urban or Southern and Eastern (respectively) counterparts, despite the greater geographic concentration of private hospitals in the urban centres. This is also relevant in the context of debates around centralisation of services in public hospitals, (37, 38), which has been strongly resisted at local levels. By contrast, the findings in this paper suggest that, despite a less geographically diverse spread of private hospitals, those living outside the main urban centres do not appear to be any less likely to access such facilities. This may suggest that people in areas less well served by private hospitals currently might be more willing to travel further to attend these hospitals, although the data do not allow us to confirm this.

The Sláintecare reforms are designed to ensure access to public hospitals based on need rather than on ability to pay. The results in this paper suggest that those with PHI are more likely to have had a hospital stay (although it is beyond the scope of this paper to distinguish the extent to which this reflects moral hazard and/or adverse selection), and unsurprisingly, if hospitalised, are significantly more likely to have a private hospital stay. Interestingly however, despite previous research suggesting that private hospitals tend to engage in ‘cream-skimming’ of lower cost patients, our findings show that those with poorer health status, despite being more likely to have a hospital stay, are no less likely than those in very



good health to have an inpatient stay in a private hospital. However, we acknowledge that treatment complexity is not captured in the model.

Those who currently access private hospitals, the majority of whom would use PHI, tend to be older, better educated, economically inactive and have no dependent children. These patients will continue to have the option of accessing private hospitals once the Sláintecare reforms are implemented, but may find that their access to public hospitals will no longer be enhanced by having PHI. However, Keegan et al (12) find that the majority of private discharges from public hospitals relate to emergency cases rather than elective – in fact they find that private elective inpatient bed days account for only 3.6% of overall public hospital bed days. Also, under Sláintecare, those with PHI will continue to be able to access public hospitals as public patients

The finding of a greater likelihood of hospital stay by those who have chronic conditions raises an interesting issue in relation to the management of these chronic conditions. Currently, treatment and management of chronic diseases account for 80% of GP visits, 40% of hospital admissions and 75% of hospital bed days (6). The Sláintecare report envisages greater management of chronic diseases at primary care rather than hospital level (6). Given that this cohort is more likely to access hospitals, chronic disease management at primary care level is particularly important in terms of taking pressure off public hospitals. However, in this regard, recent findings of regional inequity in the supply of non-acute healthcare services in Ireland, which cannot be explained by differing levels of need (39), suggest that some areas of the country require significant investment in such non-acute services.

If, as envisaged by Sláintecare, private practice is removed from public hospitals, this will increase demand for services in private hospitals, although the Sláintecare report (6) envisages that this will be mitigated by a reduction in demand for private health insurance if public hospital services are improved. Meanwhile, public hospitals will receive investment from the public purse to compensate for the loss of private income from the removal of private practice, thereby enabling them to treat greater numbers of public patients.

Therefore, the results in this paper are relevant in the context of a commitment to significant increases in hospital bed capacity in Ireland in the years to 2030 (40). Keegan et al (22) project that, under various scenarios, the additional public hospital bed capacity needed will be between 3,230 and 5,554 beds, while additional capacity of between 783 and 1,197 beds will be needed in private hospitals between 2015 and 2030.

Furthermore, the findings of our research may provide further evidence for other countries considering greater separation of public and private activity – similar debates in this regard have also been evident in Australia and the UK in particular (5). Our results show that the characteristics of those using public and private hospitals differ in some respects. While some of these (particularly the possession of various types of medical cover) reflect the particular structure of the Irish healthcare system, others, such as demographic and socio-economic differences, may be reflective of more general tendencies to seek care in private rather than public settings. Therefore, our results add to the existing international evidence base regarding factors affecting hospital utilisation patterns.

## References

1. Bjorvatn A. Private or public hospital ownership: Does it really matter? *Social Science & Medicine*. 2018;196:166-74.
2. Devers KJ, Brewster LR, Ginsburg PB. Specialty hospitals: focused factories or cream skimmers? *Health System Change*. 2003;62:1-4.
3. Duggan MG. Hospital Ownership and Public Medical Spending. *The Quarterly Journal of Economics*. 2000;115(4):1343-73.
4. Horwitz JR. Does corporate ownership matter? Service provision in the hospital industry. National Bureau of Economic Research; 2005.
5. Turner B. International Benchmarking of the Structure of Irish Healthcare. *The Irish Healthcare System: An Historical and Comparative Review*. Dublin: The Health Insurance Authority; 2018.
6. Houses of the Oireachtas. Committee on the Future of Healthcare Sláintecare Report, May 2017. Dublin: Government of Ireland 2017.
7. Cheng TC, Haisken-DeNew JP, Yong J. Cream skimming and hospital transfers in a mixed public-private system. *Social Science & Medicine*. 2015;132:156-64.
8. Cheng TC, Palangkaraya A, Yong J. Hospital utilization in mixed public-private system: evidence from Australian hospital data. *Applied economics*. 2014;46(8):859-70.
9. Shah BR, Glickman SW, Liang L, Gibler WB, Ohman EM, Pollack CV, et al. The impact of for-profit hospital status on the care and outcomes of patients with non-ST-segment elevation myocardial infarction: results from the CRUSADE Initiative. *Journal of the American College of Cardiology*. 2007;50(15):1462-8.
10. Sloan FA, Picone GA, Taylor Jr DH, Chou S-Y. Hospital ownership and cost and quality of care: is there a dime's worth of difference? *Journal of health economics*. 2001;20(1):1-21.
11. Sloan FA, Trogon JG, Curtis LH, Schulman KA. Does the ownership of the admitting hospital make a difference?: Outcomes and process of care of medicare beneficiaries admitted with acute myocardial infarction. *Medical care*. 2003;41(10):1193-205.
12. Keegan C, Brick A, Wren M-A. An examination of activity in public and private hospitals in Ireland, 2015. ESRI Working Paper; 2018.
13. Health Service Executive. HSE Annual Report and Financial Statements 2017. Dublin: Health Service Executive; 2018.
14. Central Statistics Office. Population and Migration Estimates, April 2018. Dublin, Ireland: Central Statistics Office; 2018.
15. Burke SA, Normand C, Barry S, Thomas S. From universal health insurance to universal healthcare? The shifting health policy landscape in Ireland since the economic crisis. *Health Policy*. 2016;120(3):235-40.
16. Health Insurance Authority. The Private Health Insurance Market in Ireland 2014. Dublin: The Health Insurance Authority; 2014.
17. Turner B. Unwinding the State subsidisation of private health insurance in Ireland. *Health Policy*. 2015;119(10):1349-57.
18. HIA. Quarterly Industry Newsletter September 2019. Dublin: The Health Insurance Authority; 2019.
19. Health Insurance Authority. Health Insurance Authority: A Review of Private Health Insurance in Ireland, 2017. Dublin: The Health Insurance Authority; 2018.
20. Health Insurance Authority. Report of the Authority to the Minister for Health on an evaluation and analysis of returns from 1 July 2017 to 30 June 2018, including advice on risk equalisation credits. September 2018. Dublin The Health Insurance Authority; 2018.
21. Mercille J. Privatization in the Irish hospital sector since 1980. *Journal of Public Health*. 2018;40(4):863-70.

22. Keegan C, Brick A, Walsh B, Bergin A, Eighan J, Wren MA. How many beds? Capacity implications of hospital care demand projections in the Irish hospital system, 2015-2030. *The International journal of health planning and management*. 2019;34(1):e569-e82.
23. OCED. *Health at a Glance 2019: OECD Indicators*. Paris: Organisation for Economic Co-operation and Development; 2019.
24. DOH. *Report of the Independent Review Group established to examine Private Activity in Public Hospitals*. . Dublin: Department of Health; 2019.
25. Central Statistics Office. *European Union Survey of Income and Living Conditions (EU-SILC), 2016*. [dataset]. Version 1. Irish Social Science Data Archive; 2018.
26. AIRO. *NUTs Explanation Document NUI Maynooth: AllIreland Reserach Observatory*; 2019 [cited 2019 17/12/2019]. Available from: <http://airo.maynoothuniversity.ie/Instant Atlas/Scoilnet/National/AIRO%20NUTS%20Explanation.pdf>.
27. Greene WH. *Econometric analysis*. Upper Saddle River, NJ: Pearson Hall; 2003.
28. Srivastava P, Zhao X. *Impact of private health insurance on the choice of public versus private hospital services*. Health Econometrics and Data Group Working Paper. 2008;08/17.
29. Propper C. The demand for private health care in the UK. *Journal of health economics*. 2000;19(6):855-76.
30. StataCorp\_LLC. *Stata 13 help for dprobit*.: StataCorp\_LLC 2014 [Available from: <https://www.stata.com/help13.cgi?dprobit>]
31. Doiron D, Kettlewell N. The Effect of Health Insurance on the Substitution between Public and Private Hospital Care. *Economic Record*. 2018;94(305):135-54.
32. Eldridge DS, Onur I, Velamuri M. The impact of private hospital insurance on the utilization of hospital care in Australia. *Applied Economics*. 2017;49(1):78-95.
33. Harmon C, Nolan B. Health insurance and health services utilization in Ireland. *Health economics*. 2001;10(2):135-45.
34. Cantarero-Prieto D, Pascual-Sáez M, Gonzalez-Prieto N. Effect of having private health insurance on the use of health care services: the case of Spain. *BMC health services research*. 2017;17(1):716.
35. Norton EC, Wang H, Ai C. Computing interaction effects and standard errors in logit and probit models. *The Stata Journal*. 2004;4(2):154-67.
36. Smith S. *Equity in healthcare: a view from the Irish healthcare system*. Dublin: Adelaide Hospital Society; 2009.
37. Wren M-A. *Unhealthy state: anatomy of a sick society*. 2003.
38. McHugh S, Droog E, Foley C, Boyce M, Healy O, Browne J. *Understanding the impetus for major systems change: A multiple case study of decisions and non-decisions to reconfigure emergency and urgent care services*. Health Policy. 2019.
39. Smith S, Walsh, B., Wren, M-A., Barron, S., Morgenroth, E., Eighan, J. & Lyons, S. *Geographic profile of healthcare needs and non-acute healthcare supply in Ireland*. Dublin, Ireland: Economic and Social Research Institute; 2019.
40. Government of Ireland. *Project Ireland 2040: National Development Plan 2018-2027*. Dublin, Ireland: Government of Ireland; 2018.

**Table 1 Descriptive Statistics**

<b>Variable</b>	<b>Full Sample</b> (n=10,131)		<b>Any Hospital Stay</b> (n=1,062)		<b>Private Hospital Stay</b> (n=209)	
	<b>Mean</b>	<b>Std Dev</b>	<b>Mean</b>	<b>Std Dev</b>	<b>Mean</b>	<b>Std Dev</b>
Hospital Stay	10%	0.40	100%	0.00	100%	0.00
Male	48%	0.49	41%	0.49	46%	0.50
Child/Children under 18	39%	0.47	33%	0.47	21%	0.41
Single Parent	3%	0.16	3%	0.16	1%	0.10
Married	54%	0.50	56%	0.50	70%	0.46
Third Level Education	21%	0.38	18%	0.38	30%	0.46
Post 2nd level educ non-degree	22%	0.40	20%	0.40	23%	0.42
Secondary Education	38%	0.47	34%	0.47	36%	0.48
Primary Education	17%	0.44	26%	0.44	9%	0.29
Education Other	2%	0.13	2%	0.13	1%	0.12
Economically Inactive	47%	0.48	65%	0.48	64%	0.48
Unemployed	6%	0.23	5%	0.23	2%	0.14
Employed	47%	0.46	30%	0.46	34%	0.48
Age 65 +	25%	0.49	40%	0.49	46%	0.50
Age 50_64	24%	0.42	23%	0.42	28%	0.45
Age 25_49	38%	0.46	30%	0.46	23%	0.42
Age 15_24	13%	0.26	7%	0.26	2%	0.15
Net disposable Household Income <sup>1</sup>	51,031	33,641	44,208	33,641	55,781	41,348
Log Income	10.51	0.74	10.45	0.74	10.66	0.91
Medical/GP Visit Card + PHI	10%	0.3	17%	0.37	41%	0.49
PHI Only	35%	0.48	26%	0.44	56%	0.5
Medical Card Only	35%	0.48	45%	0.5	3%	0.17
GP Visit Card Only	2%	0.13	1%	0.12		
No Medical or GP Visit card or PHI	18%	0.39	10%	0.3	1%	0.1
Medical/GP Visit Card + PHI	10%	0.3	17%	0.37	41%	0.49
Chronic Illness	29%	0.50	57%	0.50	52%	0.50
Health status missing	0%	0.00	0%	0.00	0%	0.00
Health status very bad	1%	0.22	5%	0.22	2%	0.14
Health status bad	3%	0.30	10%	0.30	5%	0.21
Health status fair	15%	0.46	30%	0.46	27%	0.44
Health status good	42%	0.48	36%	0.48	47%	0.50
Health status very good	40%	0.39	19%	0.39	20%	0.40
Border, midlands, west	28%	0.44	26%	0.44	19%	0.39
Rural	38%	0.48	36%	0.48	37%	0.48

<sup>1</sup> Net disposable household income after social transfers using national definition of income.

## Table 2 Results

	<b>Model 1</b>	<b>Model 2</b>
	<b>Any Hospital Stay dy/dx (Std. Err.)</b>	<b>Private Hospital Stay dy/dx (Std. Err.)</b>
Male	-0.179*** (0.037)	0.172 (0.119)
Dependent Child/Children	0.123** (0.05)	-0.328* (0.191)
Single Parent	-0.056 (0.113)	0.717* (0.424)
Married	0.049 (0.043)	0.039 (0.143)
Education Other	-0.06 (0.139)	0.222 (0.472)
Post Second level education non-degree	-0.077 (0.058)	-0.17 (0.167)
Secondary Education	-0.125** (0.056)	-0.147 (0.162)
Primary Education	-0.085 (0.068)	-0.651*** (0.221)
Economically Inactive	0.090* (0.051)	0.327* (0.173)
Unemployed	0.054 (0.083)	0.116 (0.347)
Age 65 +	0.188** (0.087)	0.569 (0.351)
Age 50-64	0.013 (0.084)	0.857** (0.345)
Age 25-49	0.044 (0.077)	0.581* (0.35)
Net disposable Household Income Logged	-0.004 (0.031)	-0.109 (0.093)
Medical/GP Visit Card + PHI	0.260*** (0.078)	1.758*** (0.344)
PHI Only	0.154** (0.061)	1.837*** (0.326)
GP Visit Card Only	0.063 (0.151)	
Medical Card Only	0.093 (0.063)	-0.362 (0.361)
Border, Midlands, West	-0.012 (0.042)	-0.187 (0.144)
Rural	-0.031 (0.039)	-0.046 (0.125)
Health status very bad	1.601*** (0.145)	-0.316 (0.381)

Health status bad	0.921*** (0.094)	-0.396 (0.3)
Health status fair	0.597*** (0.063)	-0.078 (0.202)
Health status good	0.233*** (0.046)	0.109 (0.159)
Chronic Illness	0.300*** (0.047)	0.184 (0.148)
Constant	-1.757*** (0.36)	-1.483 (1.145)
N	10113	1047
chi2	707.769	377.437
p	0	0
Pseudo R2	0.104	0.361
Bayesian information criterion	6327.135	843.138
Base categories: Female, no children/dependent, not a single parent, married, third level education, employed, age15_24, Very good health status; no medical or GP card or PHI; not chronic illness; eastern and southern region; urban area. * 0.10 ** 0.05 *** 0.01		
Marginal Effects estimated at sample mean values of the regressors.		